FIBER OPTICAL GAIN EQUALIZER

ABSTRACT OF THE DISCLOSURE

A fiber optical device, whose wavelength profile can be dynamically controlled in real time by the application of control voltages. The device can be used as a fiber optical gain equalizer or a wavelength selective filtering device which is compact, polarization insensitive, and of low manufacturing costs. The device comprises a stepped transparent substrate, through which the input beam is passed. Within the optical paths of the stepped regions of the substrate, electronically variable phase shifting elements are located, each operative to change the phase of the light passing through its associated step, and thus effectively adding tunability to the height of each step. Planar liquid crystal elements may be used as these elements. The elements may be pixelated, each pixel preferably affecting the phase of the light passing through a fraction of the area of the associated step, such that the interference so can be used to vary the transmission through that step. The pixels thus effectively add tunability to the area of each step. Electronic control of the height and area of each step enables the generation and dynamic control of complex transmission profiles.